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Implementation and Performance of FPGA based track fitting for the Atlas Fast TracKer

Wednesday, 21 March 2018 12:00 (15 minutes)

The Fast TracKer (FTK) within the ATLAS trigger system provides global track reconstruction for all events passing the ATLAS Level 1 trigger by dividing the detector into parallel processing pipelines that implement pattern matching in custom integrated circuits and data routing, reduction, and parameter extraction in FPGAs. In this presentation we will describe the implementation of a critical component of the system which does partial track fitting using a method based on a principal component analysis at a rate of greater than 1 fit per 10 ps, system-wide, to reduce the output of the pattern matching. Firmware design, timing performance and preliminary results will be discussed.

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